

MEMORANDUM

To:	Tina Carstens, RWMWD	Reference:	RWMWD Permit Application
Copies To:	Greg Schafer, Marathon		Saint Paul Rail Yard
	Jim Hoschka, TKDA		Marathon Petroleum Company, LLC
From:	Patrick McLarnon	Proj. No.:	13518.001
Date:	July 18, 2008	Routing:	

As an engineering representative for Marathon Petroleum Company, LLC (Marathon) on this project, TKDA is pleased to submit the following information in regard to utilizing the void space within the ballast material for floodplain mitigation.

General Description

Rule D of the RWMWD rules requires that developments placing fill within the 100-year floodplain of any water body provide compensatory storage within the affected floodplain. The project proposes to place fill within the floodplain of the Mississippi River due to elevation constraints on either end of the rail yard. The elevation of the existing rail tracks on the east and west ends of the rail yard are fixed, thus controlling the elevation of the rail yard. In order to tie into the existing rail tracks and maintain standard rail track profile grades, placement of fill is required.

To the maximum extent possible, all open areas within the available property limits (excluding the wetland areas) have been excavated to provide compensatory storage (note that due to past land uses on the property and the property being a VIC site, extensive excavations below elevation 698 feet are not allowed per the Minnesota Pollution Control Agency). Table 1 summarizes the earthwork and Figure 1 shows areas of cut within the rail yard.

Table 1. Earthwork Summary

Soil fill above existing grade	+ 12,770 CY
Ballast fill above existing grade	+ 10,980 CY
Tie fill above existing grade	+ 1,400 CY
Total fill above existing grade	= 25,150 CY
Total cut below existing grade	- 20,830 CY
Earthwork balance (fill)	+ 4,320 CY

Discussion

In order to provide overall compensatory storage, Marathon proposes to utilize the void space within the ballast material to balance the floodplain fill. Based on a brief meeting held on July 7, 2008, during which TKDA and RWMWD discussed this concept, we are providing the following information for consideration:

1. Based on testing performed by Braun Intertec Corporation (Braun), the void space of loose ballast material has been tested at 45 to 50 percent of the ballast volume. Braun recommends that after compaction of the ballast material the void space will be on the order of 35 to 40 percent. Refer to the attached letter from Braun.
2. The ballast material, which is granite, has a low break-down potential due to the hardness of the material. In addition, rail traffic in the yard is low volume and speed, which greatly reduces vibrations caused by railcars.
3. The ballast material will sit on top of a graded and compacted Class 5 base, allowing for cross drainage through the ballast material, which is a standard railroad design. The compacted Class 5 roadways within the rail yard will drain to an internal storm sewer system, reducing the potential for fine sediment from the roadways to be deposited within the ballast. Photo 1 illustrates a typical ballast section on top of a graded and compacted Class 5 base.
4. During flooding events on the Mississippi River, it is possible that sediment from flood waters could be deposited in the ballast material, reducing the amount of void space. The majority of sediment in flood waters has been transported from elsewhere within the floodplain. Therefore, there would likely be no net loss of floodplain storage, as the transported sediment would have been removed from somewhere else in the floodplain.

In order to balance the earthwork for the rail yard by utilizing the void space of the ballast material, the void space has been calculated at 40% of the ballast volume. Table 2 summarizes the earthwork with the ballast void space.

Table 2. Earthwork Summary With Ballast Void Space

Soil fill above existing grade	+ 12,770 CY
Ballast fill above existing grade	+ 10,980 CY
Tie fill above existing grade	+ 1,400 CY
Total fill above existing grade	= 25,150 CY
Total cut below existing grade	- 20,830 CY
Earthwork balance (fill)	+ 4,320 CY
Ballast void space at 40%	- 4,390 CY
Final earthwork balance (cut)	- 70 CY

Photo 1. Typical Ballast Section on Top of a Graded and Compacted Class 5 Base



Source: TKDA, Sioux Falls, South Dakota, 2004.

Conclusions

Based on the above discussion, Marathon requests that the RWMWD approve the utilization of the void space within the ballast material for compensatory storage. No additional excavation can be completed on the project site, and Marathon does not own any available property within the RWMWD for off-site compensatory storage. Marathon asks for your support in recommending this method for compensatory storage to the RWMWD Board of Managers.